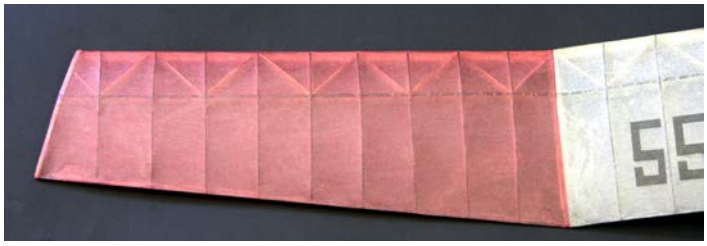
Impington Village College
Model Aeroplane Club
Founded in 1946 by Ray Malmstrom

March April 2014

Edited by Bryan Gostlow
Distributed by Tony Harper

The Interview with *Michael Marshall*
Magic Rubber

I was flattered to be asked to write something for the Newsletter about coupé d'hiver, however this good feeling began to diminish when it came to know exactly what to write about. In a club like ours there are a wide variety of disciplines and interests.
I joined the club in about 1989 when my son had built a rubber model that together we could not get to fly. Sure enough there was plenty of help in the club and my son soon progressed to radio models which he flew at Oakington. May be they were halcyon days because there were usually about a dozen people there most Saturdays and Sundays whilst my son had a radio model I usually took a rubber model and made one or two flights.
Apart from supporting the club scene indoors and out, the first contest model that I made was a KK Senator that I flew at the Oxford Gala and won the competition class. It was at this time that Andrew Moorhouse asked me if I had considered the BMFA contests at Sculthorpe and at the next opportunity I went along with him. Results at that first competition were not so good but I was becoming more and more interested. The BMFA organise a series of competitions throughout the year for a number of classes.



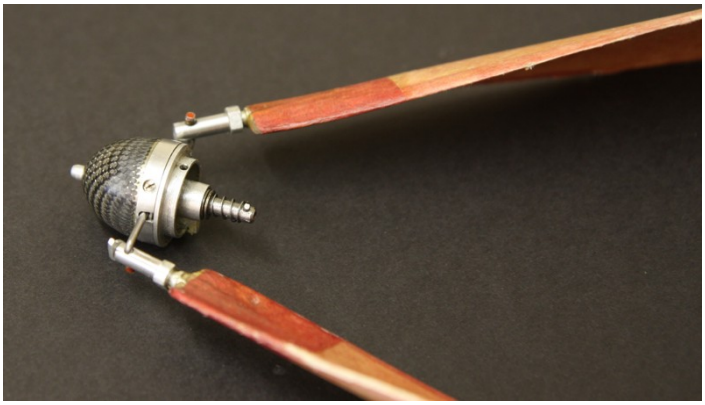
My particular interest has been for rubber models. The BMFA rubber classes are numerous and include mini vintage, like the Senator, P30, what was known as open rubber but is now called BMFA rubber (50g rubber limit), vintage, those big models, mainly of American design like the Lanzo's or Korda's where the design had to be published before 1951, classic models for designs between 1950 and1960, tailless, FIG and the premiere international class F1B. I have built and flown models in all the classes listed except F1B but was attracted most towards coupé d'hiver which when it became a national class was called F1G, a class which originated in France round about 1938. The specification has not changed much over the years and the prime thing is the 10g rubber limit. The result is a large model, say 200 square inch wing area to maximise the glide and what could be considered as inadequate power. I cannot say that this is an ideal small field model not liable to flying out of sight because the light weight, typically 80g, means that in lift they easily fly away. However the trick of successful flights with this model is to pick good air.

As well as the UK flying scene there have been opportunities to fly in France in particular in competitions for coupé d'hiver models. This has allowed me to fly at Viabon, near Chartres, most Februarys and in the summer at Poitou. These are major events for these models against international competitors.
The rubber chosen for the motors in these models is specially made in America and needs careful handling for optimum results. Most people lubricate the rubber with a soapy solution as this enables more turns. The BMFA rubber models with 50g motors will probably require 1000 turns. When Chris Strachan winds up a P30 he is aiming for say 1600 turns. With coupé d'hiver models I try for 400 turns but this is often difficult to achieve when the temperature falls. I use a torque meter always but feel and experience counts.

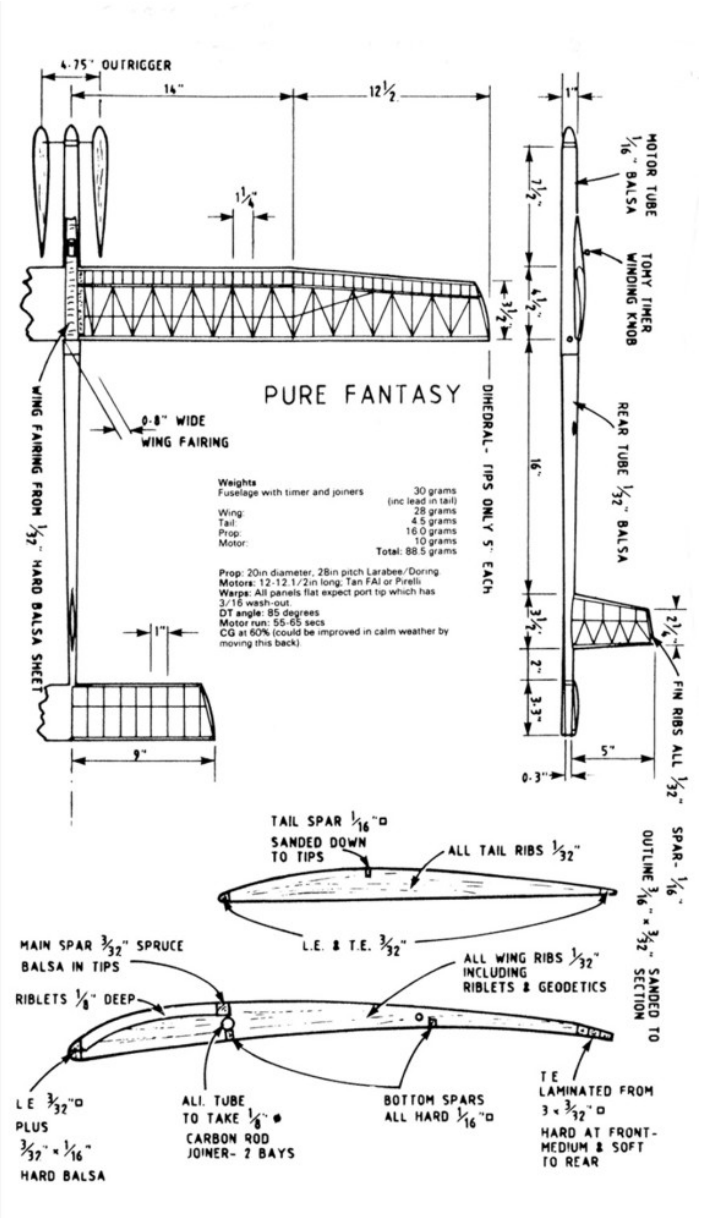
The BMFA competitions which can take place at Sculthorpe and Barkston or Salisbury Plain are

usually for three flights. This means prepare and assemble your model, wind the motor without it breaking, observe the wind direction and temperature and look for any signs that there is lift and only then launch your model. If it is in lift then you will probably achieve the set maximum of two or three minutes though if you fail to find lift one minute 30s flights can be expected.

Following a quick 30-second climb to about 150 feet, the coupé model begins its glide. The flight is normally terminated by a clockwork dethermaliser. You can then mount your bicycle and set out to retrieve. It is usual to fit the model with a radio transmitter to aid recovery but this does not always lead to success. If it was a truly long flight then an off airfield motor recovery is necessary.



Flights to the set time with landings on the airfield make for an easy days flying but there are sometimes more difficult days. I lost a coupé d'hiver at an Oxford Gala and took a long time to find it. My return journey along a different route took me through a piece of ground that was extremely muddy. It was only when I returned to the flying field that I saw the sign, Keep Out, Mud. Danger. I lost a Mini Vintage model at Oxford on another occasion but could not find it. The next day I went on holiday and when I returned a week later there was a message on my telephone to say that someone had found the model. When I called that person back he said that he had put the model in a skip! I took part in a competition on Salisbury Plain and a vintage Lanzo just flew off. Again I could not find it but three or four days later an airman called from RAF Benson, near Wallingford, to say that his helicopter had picked up the model from Salisbury Plain and I could collect it from RAF Benson. A more pleasing retrieve took place at a competition in Poitou when my coupé d'hiver flew away in the fly off round of a competition. A French competitor came up and asked me for my transmitter frequency and immediately drove off to return later with my model intact.



For F1G/Coupé I have always used published designs, for the last six or seven years, models based on an article written by David Hipperson called Pure Fantasy. However the construction methods have been altered over time to make use of carbon[1] in the wings with tissue over Mylar covering. Kevlar tube fuselages and the purchase of "front ends", propeller hub assemblies, from the Ukraine. I have one model , designed by Anselmo Zeri, that uses "instant prop" release.

In competitions it is usually possible to have two models, in a class for three flight competitions or three models for a five flight F1G competitions. You will always need a timekeeper and this person can give you some advice. In truly international classes

some flyers employ fairly sophisticated equipment to measure wind speed and air temperature, displayed by pen recorders. Since last year I have always used a temperature sensing device. (Basically two thermistors in a bridge circuit on top of a fibre glass pole showing temperature variations on a centre zero meter.) Some club competitions do not allow thermometers and you have to use the hairs on the back of your neck or look for birds in the sky.

I am currently building a model for the BMFA Rubber class which is limited to 50g motor and I have a new coupé d'hiver that is awaiting a propeller assembly from the Ukraine. I can't wait to get back into the air.

Michael Marshall.

[1] 0.2mm CF used to cap spar top and bottom, 2mm x 0.8mm CF trailing edge and 0.1mm CF ribs caps

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Ask a man who knows

We ask **Richard Staines**, *"How do you get out of lift?"* - part two

The ultimate arrangement is Crow Braking, or, for some Butterfly. It is a combination of aileron, flap and elevator mixing and today can be a 'preset' mix on many transmitters. The 'aileron/flapperon' mix above can be set with the 'preset' Crow mix by ignoring any settings for flaps. The preset mix is normally for high performance gliders with at least four servos in the wing i.e. two ailerons and two flaps and often uses the throttle channel for actuation when selected. The effect is that both flaps droop to as near 90 degrees as possible, both ailerons rise to approx 30 degrees and elevator correction is set as appropriate. The control is proportional so one uses the throttle as a brake selecting just how much is needed as landing approaches. The ideal setup for me is that when full crow brake is applied, the aircraft settles into a dive of about 30 degrees to ensure it is descending more swiftly than the air in the thermal is going up. The high drag from both ailerons and flaps will not allow the speed to build up whilst full stability is maintained by the wash out from the raised ailerons. If one thinks the descent is too fast, the throttle/slide control can be reduced whereupon the flaps rise a little, the ailerons drop a little and elevator correction adjusts as necessary. Be sure to come out of crow before touch down as the lowered flaps can catch the ground or vegetation and strip the servo gears or damage the surface, linkage or even loosen the servo.
One will appreciate that setting these mixes can take a little time. Very easy to put numbers in the programme when initially progamming at home but it is the fine adjustment on the flying field to find the 'sweet spot' that takes more patience.
When flying an electric glider, the throttle stick is of course used to control the motor and thus not available for Crow Braking. Transmitters with preset mixes often have 'free mixes' and so it is possible to assign controls to alternative channels.

And an after thought .... failsafe .... set this to apply a partial brake as well as closing the throttle. Which ever method one uses as described above, it could be useful that in the event of loss of signal, the aircraft enters a trim that will bring it down fairly gently as opposed to heading of into the distance. I would suggest a slight turn also be incorporated. I found this very useful several years ago when my transmitter alarmed to advise me the battery was low. It was a little awkward because at the time the glider was in lift, at I guess 1500 feet plus, still going up and getting very small. I knew from testing I had only 5 minutes or so of TX life left and this was not enough time to be sure of landing safely. So, I switched the TX off, the model went into stable preset crow brake and descended in a slow circle. My memory (fading as it is) tells me it took around 10 minutes for the model to reach an altitude where by switching the TX on again, control was regained for long enough to bring it home to a safe landing. The total flight time was well in excess of 2 hours at the end of a days flying, so I think I have a little excuse for the low TX battery.

Looking Up

a report from **Tony Harper**

Since my last report the grey skies have arrived and almost every interesting sound has been above cloud. Of course there are the usual sounds which most of us are familiar with and these are as good as a sighting. You can't mistake the sound of a Hercules or an F15 with its two throttle settings, either flat out or full idle but as sounds go there has been little of interest. In fact flying activity has been very low; several days could go past without a sound or a sighting. The most activity occurred the day after the PAVE Hawk went down at Cley. It was almost as though the increased flying was a gesture of defiance. Nothing has been seen of the Osprey this year; two have been away to a base near Pisa but have had trouble getting back due to the weather over Europe! I now know that those two are two thirds of the compliment at Mildenhall. I wonder where the other one was. However, on a brighter note there has been some interest. On one of the few really frosty mornings a Piper Cub was seen going slowly North West. After days of thick overcast seeing this Cub with its bright yellow against a cloudless blue sky was a real treat. You may remember a few issues back I mentioned the Pilatus U28A, most are unmarked and are used for clandestine operations. Late last year three arrived in quick succession, I'm sure it was three, the first was barely out of sight before two more could be seen. I always wonder what they are up to but I don't suppose we will ever know.

One morning a Beech RC-12X Huron spent some time doing circuits and bumps. The Huron is a twin-engine Turboprop aircraft based on the Beechcraft Super King Air and Beechcraft 1900. The RC-12X version is used for intelligence gathering which is no surprise as it bristles with aerials. Like the Pilatus mentioned earlier I have no idea where it comes from. Towards the end of 2013 a dozen or so of Lakenheath's F15's spent a weekend at Mildenhall all lined up with a couple of tankers. It must have been some sort of training exercise because Lakenheath was still operating as a base and the F15's were from Lakenheath as they carried the LN code letters on their fins. Now, leaving the best to last, I was watching two KC135's, or to be more precise I was watching their landing lights as they approached from the West when I heard an aircraft coming from the opposite direction. This was unusual to see two aircraft on, albeit, a distant approach while another was climbing out towards them after taking off. I looked back to the two and it was obvious that they were still a long way off.

It was then that the single aircraft began to climb and at last I could see what it was, it was a Martin WB57F (NASA 928) It is one of two, soon to be three, still flying on high altitude air sampling duties. As I watched the angle of climb became very steep and the sound became very loud and, after several seconds, fifteen, twenty, something like that, it did a partial wingover into level flight and headed off to the North much higher and well clear of the KC135's. I had seen this aeroplane before or its brother a few years ago and one was based for a while at Upper Heyford checking the radiation fallout from Chernobyl at the time of the meltdown. It is a much modified version of the Martin B57 which itself is, or was; a licence built English Electric Canberra. I have found a recent photo of this aeroplane, not taken by me, which shows it is clearly derived from the Canberra. It has longer span and greater chord wings, instrument pods, a fighter style canopy and much modification in the engine department. Two are in service with NASA at the moment and a third has been taken from Davis Monthan airbase near Tucson for refurbishment and when this is done it will join the other two.

A flea in your ear?

Membership secretary **Tony Harper**

If you have not renewed your membership this will be the last newsletter you receive.

Paper Plane Competition

Bruce Lindsay *reports*

As per usual the last Friday before Christmas we had a paper plane contest. On the evening many of us were waiting for Chris Strachan to turn up with his supply of regulation paper. Many of us had a test at home to find the best designs, others relied on the designs Chris had brought.

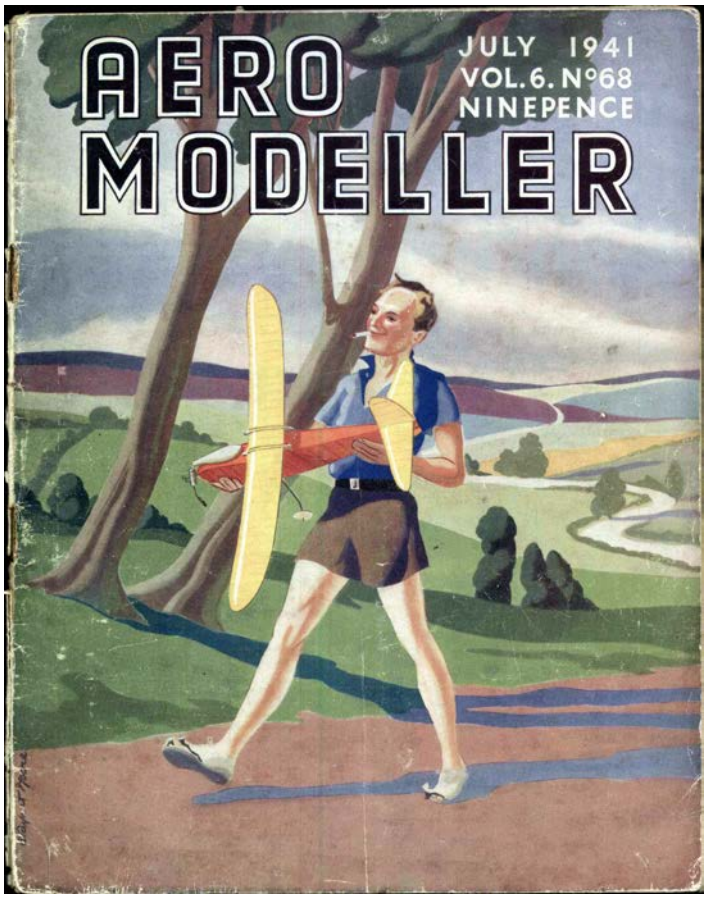
It was not long before paper planes of all shapes were going in all directions. The rules were five flights on the trot timed as accurately as possible. If you thought you could do better then your previous times were stricken from the record and your new times noted.

Margaret Staples mainly did most of the timing and did a good job of it. Chris Strachan made a start of official flights with an average of 4s managing a good consistent time. Richard Staines also did some early times to a very high standard of nearly 6s every flight which ended up being the benchmark. We all tried to emulate this but all of us failed. Gareth Neal arrived late and tried very hard gaining a flight time of over 5.3s but the other four flights let him down.

1st	Richard Staines	28.74s
	Gotthelf Wiedermann	25.56
	Bruce Lindsay	23.82
	Chris Strachan	20.12
	Gareth Neal	18.41
	Margaret Staples	17.52
	Phil Haines	13.50
	Mick Staples	11.78

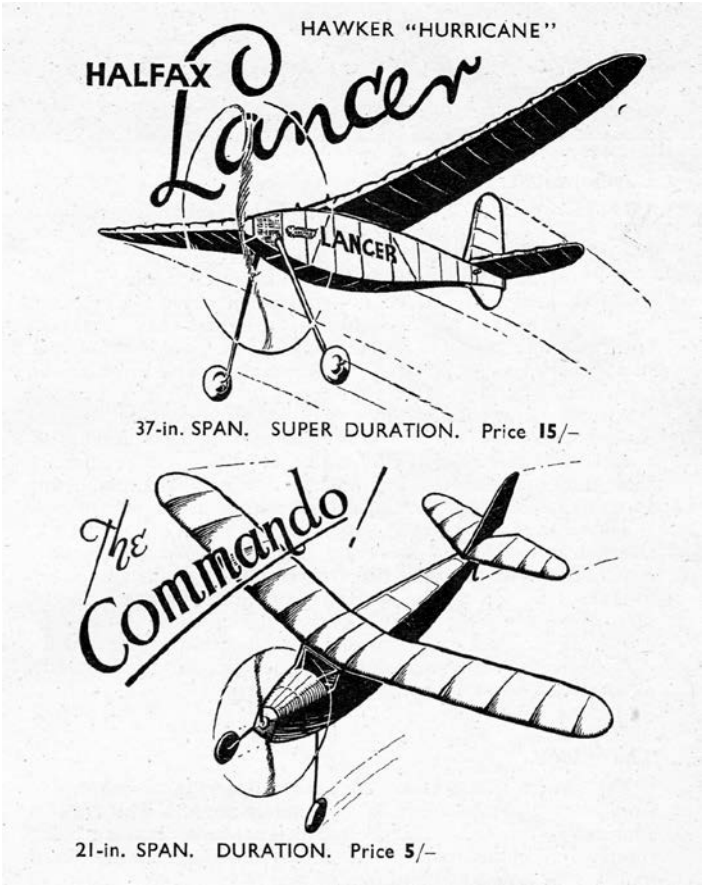
Great covers

Aero Modeller **July 1941**



It seems to me to be such an idyllic impression of model flying and the English country-side, painted by Rupert C Moore. Is he returning from a good flight or anticipating one. The cigarette is somewhat of an anomaly today (but never anything better for lighting D/T fuse), as are the worn out plimsolls. Life was simple .... and the cover sticks in my mind. I just like it.

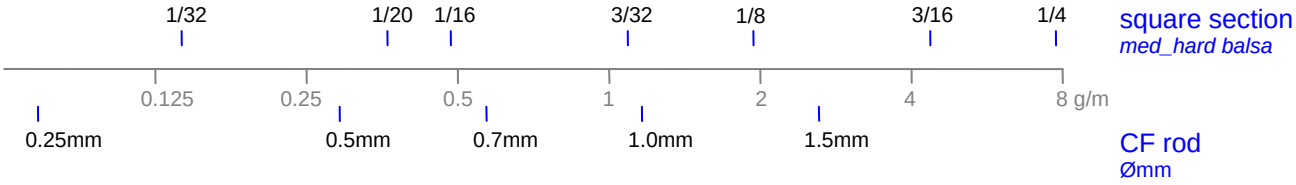
Richard Staines



[*who marketed these models?*]

New tricks for old dogs

Carbon rod and Heat Shrink



Alan Hunter and I have been using carbon rod with heat shrink, though we make no claim for originality.

Alan writes: I have been using Carbon for RC pushrods since it became available as it is so stiff and light and available in lots of diameters - anyway - I use a short bit of piano wire in the normal way for the servo and horn ends as you cannot bend carbon - well not at right angles - I use Heat shrink tube shrunk over the lapped joins (about 20mm) and then wick thin cyano down the heat shrink when I have got the correct length set for neutral between servo and horn - i.e. you can adjust/slide the joint length about until happy with the neutral - then cyano. If a cock-up you can slit the heat shrink down its length with a blade and peel it off for another go - simples !!

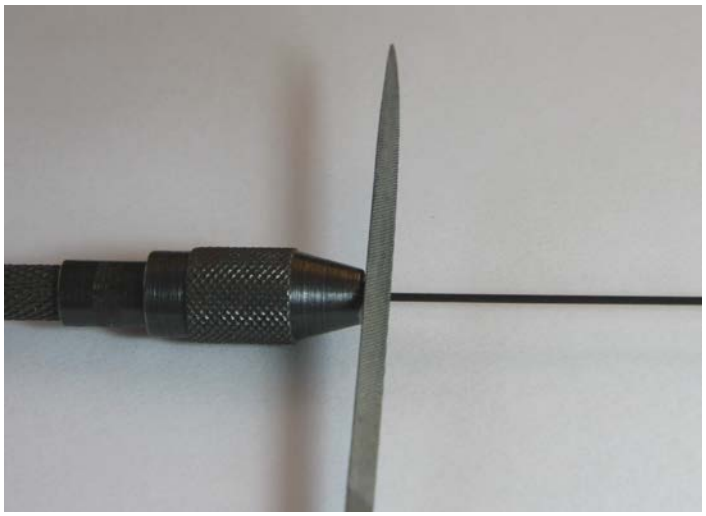
[why the rubber band? – well you can slip the pushrod off the servo or horn without any bending]

It is important with the smaller and probably all models, that the carbon runs absolutely naturally and has no bend in it as it will apply a force if bent that will slowly knacker the structure/hinges it is attached . . . it is easy to put a gentle bend in the carbon when rigging up without realising the grief it will cause the structure given time to work on it.

Never had one fail yet. I do it for relative unbustability and, of course, ease of adjustment - works well on both counts for me - but is there a weight penalty ? [see table above]

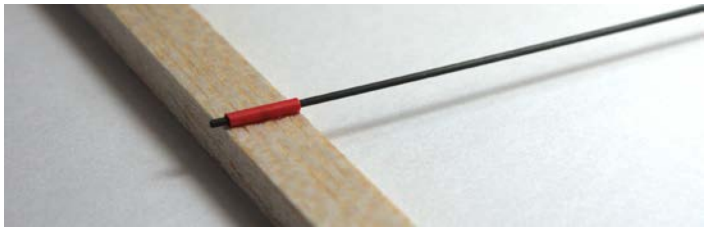
On the small RC stuff where the wire ends are say 22 swg or thinner and the loads on control surfaces small, I often add an angled bend up and then down to form a triangle or U to allow some length adjustment by opening or closing the gap - this for models where normal screwed end adjusters are too large/heavy to accommodate - this is useful with little foamies where I do a seasonal adjustment as the foam moves a mile with temperature compared to the pushrods affects the neutral point.

Also worth pointing out that the fit of the wire in servo arm and horn needs to be as close as possible - I have seen many planes where the fits are sloppy leading to noticeable lost motion and vague centring/possible flutter.



[CF can be cut to length with a pin vice and triangular needle file – score all round then snap off]

The CF rod/heat shrink adjustable combination can be employed for wing posts. Slip a piece of heat shrink over a drill of slightly smaller diameter then shrink.

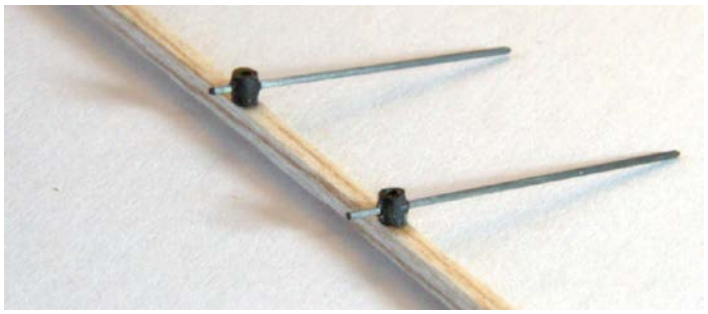


For attachment use medium cyano. Heat shrink has just the right amount of flex and drag so stays put with the minimal loads applied if sized correctly. For wing posts I used .7 carbon - pre carbon, I would have used thinned/rounded 1/16th med/springy balsa - and is a hell of a lot harder to arrange adjustment with the paper tubes.

It's tempting to try 0.5 carbon or even 0.25 but have yet to source heat shrink down to these diameters.

Here 0.5 CF [better still, a 0.45mm drill] is passed through the heat shrink before showing it the heat gun. Be aware that CF cannot take too much heat.

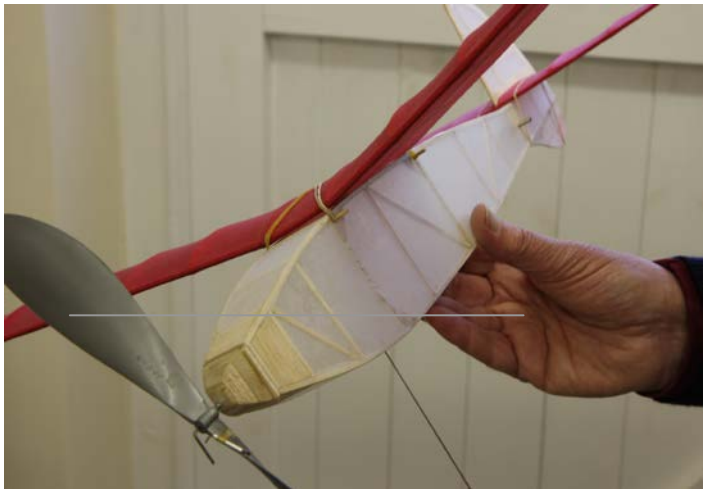
[0.5mm CF wing posts on a piece of 1/16 square]



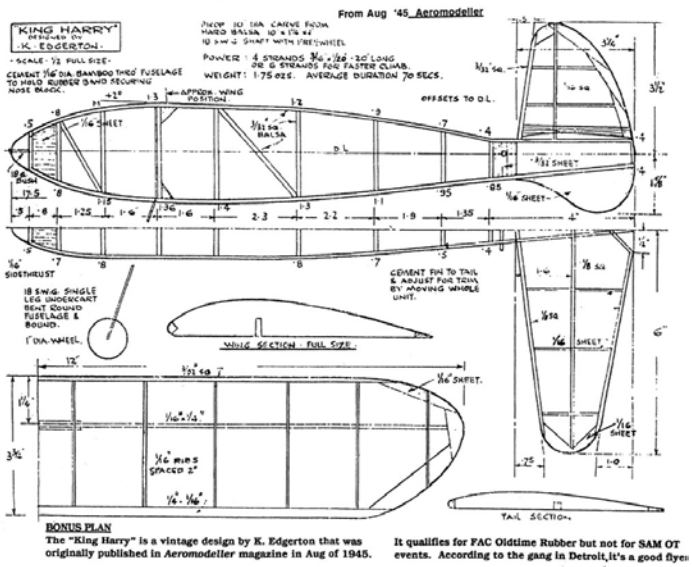
Winter Blues

a suggestion from **Michael Marshall**

Perhaps like me you find this time of the year hard going; poor weather, short days and little outdoor flying activity. I would like to suggest a small project in preparation for the better days ahead and give early notice of a one model contest to be held as part of the club's 2014 outdoor flying calendar.



This is an easy to build model with a cracking performance. It is a design published in 1945 by a Mr Edgerton called King Harry and is included in Vic Smeed's book Plan Parade.



It appeared in Aeromodeller in August 1995 with the original single leg undercarriage changed to two legs and became Prince Hal.

Original Power: 4 strands 3/16 x 1/20 – 20 long or 6 strands for a faster climb. Weight: 1.75oz Average duration 70s

If you can't find the plan in your library of old Aeromodellers plans are available on Outerzone (www.outerzone.co.uk) or from Vic Smeed's book *Plan Parade*.
I can supply copies if required. Testimony to its performance is described on the Hip Pocket Forum. (http://www.hippocketaeronautics.com/hpa_forum/index.php)

Any queries let me know.

Online connections

An internet discovery by **Alan Hunter**

You could be forgiven for thinking nothing connects Stiffkey in Norfolk with Norma Jean but Alan's found one and unearthed some aviation history.

Open up Google Earth, or Alan's preferred site: http://www.flashearth.com/ and look north and west of Stiffkey

More information in May_Jun newsletter, or for the full story right away, follow this link:
RCATS and The Whirlygig - v5

Stability and Control

A tale of two Great War aeroplanes

The atmosphere at Farnborough brightened in the early November morning, when the prototype S.E.5, which had been completed two days earlier, was wheeled out for its first flight in the hands of their popular chief test pilot, Frank Goodden. He got in the cockpit, re-ran the engine, waved away chocks, and taxied towards the slight slope on the east of the rough aerodrome used by Cody for his early flight attempts. Turning towards the heathland and pines of the western boundary, Goodden opened the throttle for a preliminary run, scarcely airborne, to gauge the controls and stability. Two more - and the little crowd saw he was ready. There was a slight puff of blue as the trim little biplane ran forward, lifted its tail, and mounted steadily into the distance. This was the prettiest, most functional aeroplane Farnborough had yet produced. Completely different in appearance and design techniques from the Sopwith fighters, it gave the same impression of eager 'flyability' though seemed more formidable than the dainty Sopwiths. No paint could camouflage its Farnborough ancestry, for the tail with skid and rudder integrated, the fuselage form, and heavily staggered wings with marked tip rake followed the pattern of the R.E.8.

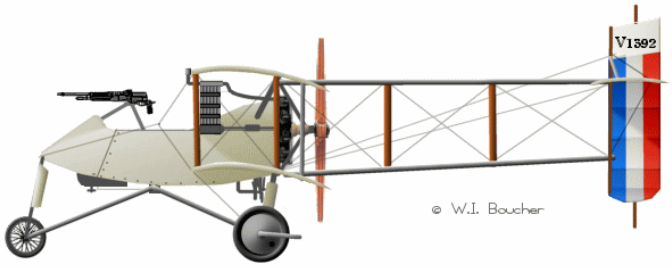
Presently it was seen returning, the emphatic dihedral giving individual distinction. In a long curving turn over Aldershot, Goodden brought the fighter in with steady glide, making a perfect three-point landing as he touched down 100 yd beyond his starting-point. Returning to the spectators he switched off, put up his thumbs, and said to Folland: 'She's a pixy!'

[Ball said driving his Morgan was only second best to flying]

Next day, shock-headed, long-haired Capt Albert Ball, DSO, the rising air ace, came to try her. On leave from France after destroying ten enemy aircraft and forcing twenty down, he had in mind comparison with his daydream - a stocky, powerful-looking fighter which he had sketched that summer and was trying to get his father, Alderman Ball of Nottingham, who was a director of the Austin Motor Co, to have built.

A 10-minute flight with the S.E. sufficed. After the little Nieuport V-strutted rotary fighters Ball had been flying, he did not like this much more stable machine. Goodden, long accustomed to the many highly stable Farnborough designs, had not seemed aware that the S.E.5 was anything but perfect. Later Ball wrote when stationed at London Colney as Flight Commander in No. 56 Squadron: 'The S.E.5 has turned out a dud. Its speed is only about half Nieuport's speed, and it is not so fast in getting up. It is a great shame, for everybody thinks they are so good and expects such a lot from them. Well, I am making the best of a bad job. If Austins will not buck up and finish a machine for me I shall have to go out on S.E.5s and do my best.'

British Aviation – The Great War and Armistice by Harald Penrose



We were soon introduced to the aircraft we were to fly. The Government, thinking something particularly strong was required to stand up to the rigours of tropical climate, sent out all-steel-construction Voisins, with 135-h.p. Canton-Unne water-cooled radial engines. The engines were powerful and reliable, but the machines, as flying machines, were terribly heavy on control and slow to answer. When the sun was up, the bumps were such as none of us had ever dreamed of before, so that the return from a long reconnaissance developed into a wrestling match with the joy-stick and rudder-bar.

After the last of the Voisins we had B.E. 2c's to fly and I took one back to Kilossa as soon as I was able. These were just the job for tropical flying at low level, with underpowered engines.
They were engined with 90-h.p. R.A.F. engines, an 8-cylindered V engine, being an improvement on the well-known 70-h.p. Renault engine. But the beauty of these machines to us was that, once you were up to your cruising height, you could adjust a spring which would hold your elevator roughly in the position you wanted for level flying, and you could afford to ignore totally the violent bumps that threw up one wing-tip and then the other. With

your rudder central and held in that position by a spring, you could fly hands-off, because the machine was automatically stable and would right itself whatever position it got into provided there was enough space between you and the ground. We used to try, when well up, to see if there was any position we could put them in from which they would not right themselves if left alone. If you pulled them straight up vertically (so that they hung momentarily on the propellers) and then let go everything, they would tail slide very gently and then down would go the nose until the machine gained flying speed and everything would be normal again.

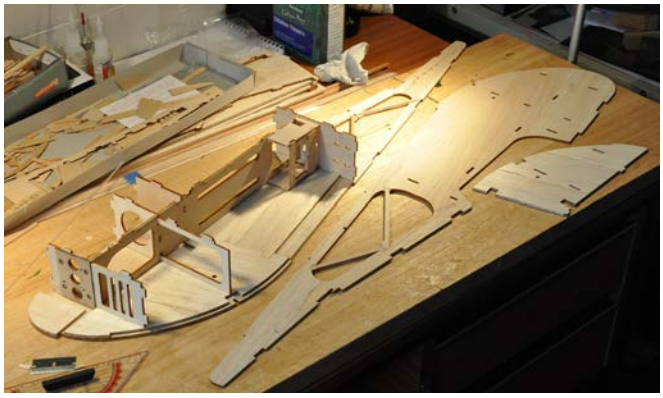
It was very comforting, having carried out experiments like this, and also letting go everything when upside down, to realize that whatever position the elements threw you into, the machine would right itself. We just let them go their own way, except for altitude and compass course. What a difference from the Voisins - so very heavy on control and absolutely unstable in every way.

Early Bird by Major W G Moore

A tale of two **FREDS**
by **Gotthelf Wiedermann**

Whilst idly surfing online for Eric Clutton's FRED (Flying Runabout Experimental Design), a British homebuilt I always thought an attractive subject for a model aeroplane, I came across a FRED I hadn't seen before at http://www.youtube.com/watch?v=DZYpUyYKPAg This model looked more like a caricature of an aeroplane, with a short stubby wing and a cartoon pilot. It was love at first sight! The kit is from North American model kit manufacturer Stevens Aeromodel (http://www.stevensaero.com/) who produces an attractive range of laser-cut model aeroplane kits, of which the smaller ones are available in this country from Micron Radio Control. FREDe is produced in three sizes of 27, 41 and 55 inch wingspan. The most interesting aspect of the design is the wing. It is mounted quite high above the fuselage which means the model is totally stable without need for dihedral or ailerons, with the fuselage providing some sort of pendulum effect. Its fat wing profile, undercamber, three turbulators and a very deep chord add further to the stability. I built the smallest FREDe (300) last year and had a lot of fun with it, even though there was a need for some modifications, of which more later. This review is mainly of the 41 inch model (FREDe x 1.5) which was on sale at reduced price from Micron Radio Control, so I couldn't resist that one either.

The kits come in a cardboard box containing a pack of very good quality balsa and ply wood, and several plastic bags containing the undercarriage, fittings, accessories, a profile pilot, instrument panel and cockpit coaming in black foam rubber. Also included area superb building instructions with photos showing every step of the process. This booklet can also be downloaded in colour from the manufacturer's website. Not included are motor, wheels, battery, radio control, covering materials and glue. The laser cutting and fit of the various parts is superb.

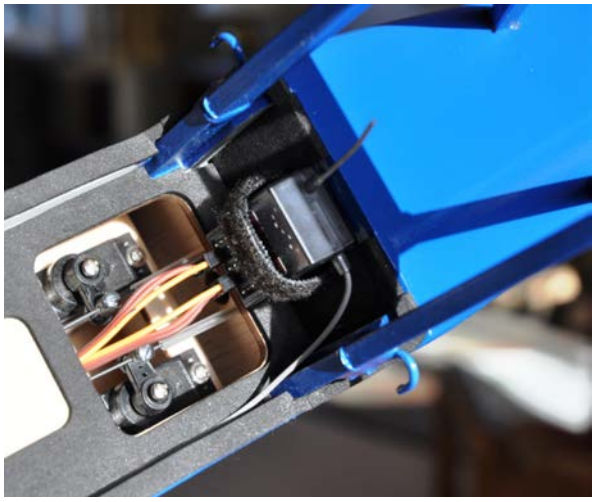


I started with the fuselage. The core of this consists of a horizontal tray and several bulkheads in plywood which are quickly slotted together without applying glue at this stage. One of the first considerations is the fitting of the motor. There are four holes ready drilled in the front bulkhead. Make sure that your motor mount fits these hole spacings. As mine did not fit, I drilled new ones and did so off-centre to the left so that, once right thrust has been incorporated, the propeller is pretty much in the centre of the fuselage. Next, the fuselage sides are glued and, once dry, the plywood core is slotted into one of the sides and spot-glued there, and the servo tray added. After having fitted the other side, all the joints are bonded with thin superglue resulting in a very strong and torsion-free structure.

If you use superglue, all the parts of the model can be assembled in a very short time. If you hate superglue or are allergic to it, I would recommend PVA rather than balsa cement, as this has a tendency to distort things. This process takes a little longer, of course. Finally, various doublers, and reinforcements, followed by the fuselage tops and bottoms are added. Holes for the control rod tubes are predrilled and pretty much in the right place. There is a removable battery hatch in the fuselage bottom which is retained by two magnets. The battery is attached with Velcro to the underside of the horizontal tray above the battery hatch, the ESC somewhere between the motor and the battery.

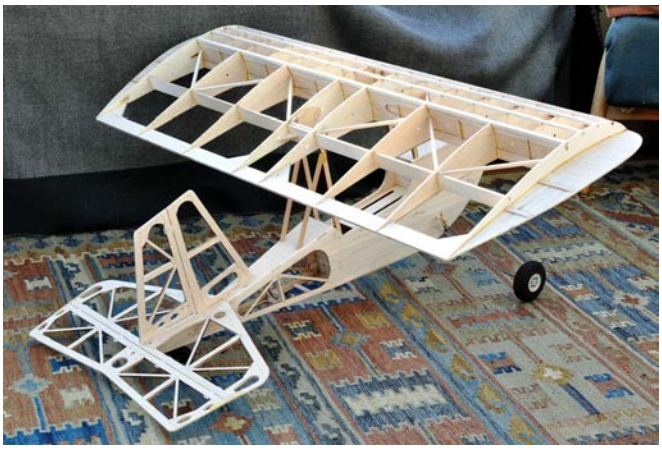
The wing, too, is assembled very quickly, again using the cyano spot-gluing method or PVA. All the wing parts in the larger FRED were straight, requiring no corrective measures. On little FREDe the trailing edge , which was in one piece, had a slight curve in it, so I split it carefully with a sharp knife and re-glued it having reversed one of the halves. Wing tips are slotted into the outside rib producing a nice curve along the centre of the profile. On little FREDe the wing tips had to be soaked in hot water for a while as the grain was in the wrong direction. The only thing that needs to be sanded and shaped is the leading edge.

The tail plane, again, was very quick and straightforward to assemble. Hinges need to be fitted, but holes for the control horns are already in place. The trailing edges are just left blunt and square, while the leading edges are rounded. The tail wheel is connected to the rudder, so the rudder servo will operate both. The entire tail plane & tail wheel assembly happens after covering. The last one to fit is the ingenious undercarriage. This is pre-bent and secured with rubber bands to a peg across the fuselage, providing a very effective suspension.
The smaller FREDe was covered in dark blue Solite on the fuselage, but I used Solarfilm on wing and stabilizer because the Solite silver was semi-translucent, which I did not like. The larger FREDe I covered as follows: Solarfilm on fuselage, fin and stabilizer, Solartex on the wing and the control surfaces. Little FREDe came out at the specified weight of around 380 gr, the larger one at 1000 gr (rather than the stated 880 gr). Even so, this is still only 26 gr/sq dm (8.63 oz/sq ft), putting it in the glider/trainer category, very similar to vintage models.



Now for my modifications. Cute as FREDe is, the high wing, i.e. high centre of gravity on the ground, short fuselage and short wing span make it somewhat unstable on the ground, both during take-off and landing, and this is were, in my opinion a serious design flaw reared its ugly head. The wing sits on fairly tall wing struts, and is retained by two wires pins which are fed through holes at the top of the wing struts and two pairs of retaining lugs in the wing. As a result there is no give. The front wing struts are shorter and braced to forward, but the rear ones are very tall and completely unsupported. The inevitable result is that on a rough landing or wobbly take off the plane will tip on to one of the wing tips and break the rear wing struts. After some deliberation I decided on a new wing retaining system: The rear wing struts were braced to the rear and platforms glued between the tops of the wing struts. The wing has now a plug inserted on the underside with piano wires sticking out sideways. The wing is then secured with rubber bands between these wires and hooks fitted to the bottom of the wing struts. Locating plugs ensure the correct position of the wing. The modifications to the struts make this a much stronger structure both fore-and-aft and across, while the wing can move if hitting the ground first. This modification has proved itself in action and was adopted for the larger FREDe. It

was much more difficult to apply to a completed model, requiring some delicate key-hole surgery.

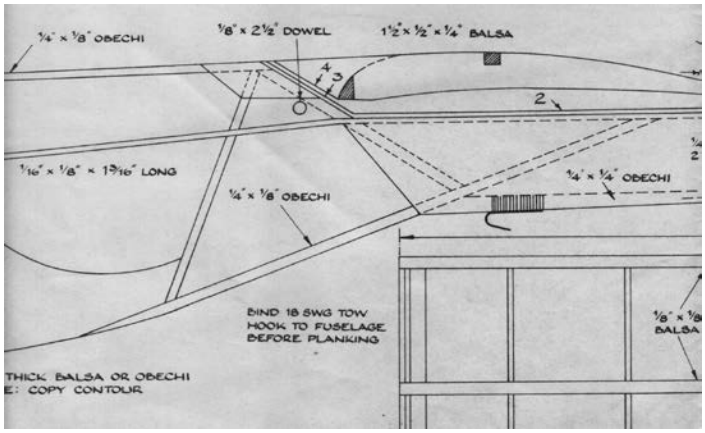


The other modification was to replace the recommended geared brushed motor with a brushless motor, as I found the model to be a little underpowered. The chosen Emax 22…. is half the price, half the weight, has 50% more power on a 2-cell lipo, doesn't waste energy on a gearbox and enables the use of a propsaver. It also can be fitted to a motor mount that fits the 10 mm square motor peg. The transformation was quite dramatic, and although this isn't necessarily the sort of model you want to rocket into the sky a lot, the power reserve is very reassuring. I can not understand why the brushed/geared unit is still being recommended as the chosen motor.

As I said, I had a lot of fun with FREDe. Unstable as it is on the ground, it is superbly stable in the air and a joy to fly. The rudder is very powerful, so the instructions recommend 70% expo on full throws (30 degrees) and 50% on low throws. Recommendations for the elevator are 50% and 30%. However, all my flights last year were with a non-computerised transmitter, so I only flew on reduced throws; even so, FREDe felt rather responsive on the rudder. Because of the short wing and powerful rudder FREDe is capable of extremely tight turns, yet without ever feeling unsafe. The stall is very benign – just a drop of the nose without any signs of tip stalling. Blisteringly fast spins are possible with immediate recovery, once the rudder is neutralised, and snaps, stall turns and wingovers are easily possibly (you'll have to take the manufacturer's word for it). The only thing that is difficult to achieve, if at all, is inverted flight. Once the power cuts (usually after about 15 – 20 minutes) you have a gentle glide similar to a vintage power model. I found that FREDe attracts a lot of attention and puts smiles on people's faces, especially if the pilot has a scarf fluttering in the wind. And, of course, there is no limit to your creativity when it comes to choosing a pilot: Snoopy, a Muppet, Scooby-Doo… I look forward to flying its larger brother this year and experimenting with my new computerised transmitter. What next? It just occurred to me that a half-size FREDe would make a nice peanut-scale model.

FREDe (300)
Wing span: 69 cm (27")
Weight: 380 gr
Motor: Emax 22…
Prop: GWS Slow Fly 9x4.7
ESC: 20A (from BRC Hobbies)
Servos: Blue Arrow 5 gr
Battery: 800 mAh, 2S lipo

FREDe x 1.5
Wing span: 104 cm (41")
Weight: 880 gr (mine is 1000 gr)
Motor: Emax…
Prop: 10x4.7 or 11x4.7 (not yet tested)
ESC: 40A (from BRC Hobbies)
Servos: Tower Pro, metal gear 9 gr
Battery: 2200mAh, 2S lipo

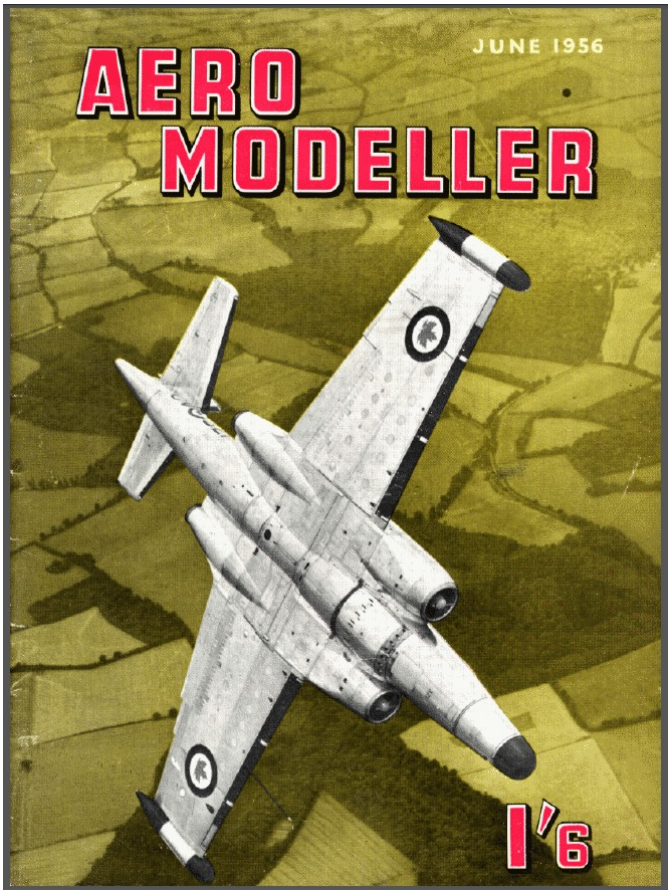


[*Who do you think might have drawn this?*]

How things were

Radio Control *back in the days*

We have to go back to June 1956 and an article in Aero Modeller that took you step by step, through four pages, on building ***The* Hill 2 *Valve* Receiver**



A youthful Raymond Fella decided to take on the task and sent away for *the bits* including a sensitive P100 Polarized Relay.

He followed the instructions to the letter and carefully tuned the slugs until he had just the right amount of anode current change while keying the transmitter.

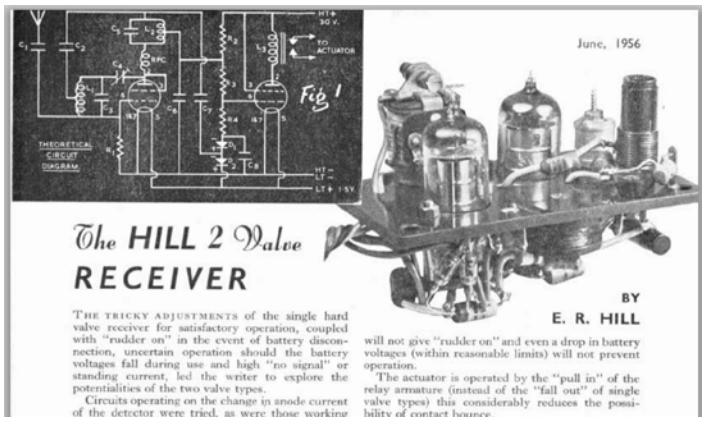

June, 1956

Fig 1

The HILL 2 Valve RECEIVER

BY E. R. HILL

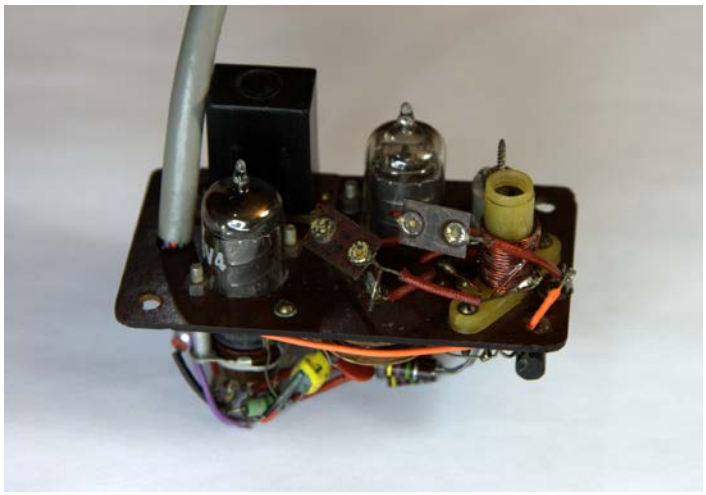
THE TRICKY ADJUSTMENTS of the single hard valve receiver for satisfactory operation, coupled with "rudder on" in the event of battery disconnection, uncertain operation should the battery voltages fall during use and high "no signal" or standing current, led the writer to explore the potentialities of the two valve types.

Circuits operating on the change in anode current of the detector were tried, as were those working

will not give "rudder on" and even a drop in battery voltages (within reasonable limits) will not prevent operation.

The actuator is operated by the "pull in" of the relay armature (instead of the "fall out" of single valve types) this considerably reduces the possi-

And a mere 58 years later he still has the receiver he made to prove it!



Footnote

A comment or two from the *editor*

Fewer innovations this time around:
Stability and Control draws upon the vast amount of *full size* material that exists and which I know appeals to many of you; *Online connections* aims to draw your attention to internet items of interest to aeromodellers of all descriptions and *How things were* says it all.
I've twisted Tony's arm to let me squeeze in a few more pages. As most people receive the newsletter as an attachment the cost implications are minimal.

John Upton is planning to add to the website the catalogue of Ray's designs which John Valiant produced, and maintains.

A sincere thank you to everyone who's contributed to this edition and an apology to those who won't see their pieces until the May_June edition.

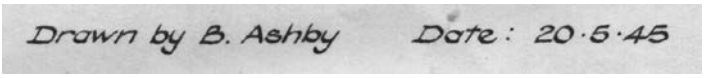
Who marketed these models? – **page 5**


MANUFACTURED IN GREAT BRITAIN BY 'PHONE 61201

MODEL AERO SUPPLIES

146, Spring Hall Lane, HALIFAX, Yorkshire.

Who do you think might have drawn this? - **page 11**


Drawn by B. Ashby Date: 20·6·45